

Impact of Investment Efficiency on Cost of Equity: An Empirical Study on Shariah and Non Shariah Compliance Firms Listed on Pakistan Stock Exchange

Abbas, Nasir; Ahmed, Haris; Malik, Qaisar Ali; Waheed, Abdul

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Abbas, N., Ahmed, H., Malik, Q. A., & Waheed, A. (2018). Impact of Investment Efficiency on Cost of Equity: An Empirical Study on Shariah and Non Shariah Compliance Firms Listed on Pakistan Stock Exchange. *Pakistan Administrative Review*, 2(3), 307-322. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-60206-5>

Nutzungsbedingungen:

Dieser Text wird unter einer CC BY Lizenz (Namensnennung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:
<https://creativecommons.org/licenses/by/4.0/deed.de>

Terms of use:

This document is made available under a CC BY Licence (Attribution). For more Information see:
<https://creativecommons.org/licenses/by/4.0>

Impact of Investment Efficiency on Cost of Equity: An Empirical Study on Shariah and Non Shariah Compliance Firms Listed on Pakistan Stock Exchange

Nasir Abbas

PhD Scholar

Riphah International University

Rawalpindi, Pakistan

nasirabbass@hotmail.com

Haris Ahmed

Faculty of Business and Technology

Foundation University

Islamabad, Pakistan.

harisahmed.pk@gmail.com

Qaisar Ali Malik

Faculty of Business and Technology

Foundation University

Islamabad, Pakistan.

qamalik@gmail.com

Abdul Waheed

Faculty of Business and Technology,

Foundation University

Islamabad, Pakistan.

waheed.furc@gmail.com

Abstract: The primary purpose of the study is to investigate the impact of investment efficiency on cost of the equity of firm. This study further explores whether the relationship of investment efficiency and cost of equity is different for the shariah and non shariah compliance firms. Using sample of 235 non financial firms listed at Pakistan stock exchange (PSX) for the period of 2005-2015, the results revealed that there is a negative significant influence of investment efficiency on the cost of equity. This signifies that investors required rate of return increases with the increase in the level of investment inefficiency. We also found out that the negative association of investment efficiency and cost of equity is weaker for the shariah compliance firms than for non shariah compliance firms. The results of our study also provided evidences that overinvestment is positively associated with the cost of equity. But we are unable to find significant impact of under investment on the cost of equity, this pointed that over investment is considered more serious problem for investors as compared to the underinvestment. The results furnished empirical support to our argument that shariah acts as a mechanism to lower bankruptcy and leverage cost hence reduce the cost of equity. The findings are helpful for

academicians, regulators, investors and Shariah board. Further research may be conducted in different economies in order to generalize the findings.

Keywords: Investment efficiency, cost of equity, bankruptcy, Pakistan stock exchange (PSX),

Reference: Reference to this article should be made as: Nasir, A., Haris, A., Qaisar, A. M., & Abdul, W. (2018). Impact of investment efficiency on cost of equity: an empirical study on shariah and non shariah compliance firms listed on Pakistan Stock Exchange. *Pakistan Administrative Review*, 2(3), 307-322.

1. Introduction

The current study aims to explore the relationship between the investment efficiency and cost of equity in shariah and non shariah compliance firms listed in Pakistan. The relationship between investment efficiency and cost of equity is the hot ranging debate and fundamental concerns for improving the corporate governance practices (McNichols & Stubben, 2008). Previous studies suggested that firms investment decisions derives a cost of equity of investors, if a firm is investing efficiently it may reduces the cost of equity (Pindado & De La, 2009).

However, past literature indicates that in many instances, firms deviate from optimal investment level due to various market imperfections (Agrawal & Knoeber, 1996). Theoretically, agency problems gives rise to the cost of equity as it leads the firms towards inefficient investment decisions due to which the investor demand high returns (Ohlson & Juettner, 2005). Investment efficiency is an important concept because firms with higher investment efficiency are associated with the lower agency problems which mean that by aligning the interest of management and shareholders of the firms reduces the risk of deviating from the expected level of investment (Omran, 2009).

Substantial literature in the area of corporate finance indicates that the firms with higher corporate governance practices ensure the balance among the interest of shareholders and management (Ali, Chen & Radhakrishnan, 2007). As ownership is separated from control, firms with poor corporate governance mechanism face the issue of conflict of interests between the real owners of the firm and the management (Hope & Thomas, 2008). According to a study, investors now a day's prefer to invest in firms with high corporate governance structure as they consider corporate governance an important financial indicator (Hope, Kang, Thomas & Yoo, 2009). Another related study points out that the difficulty in monitoring the firm's corporate governance practices results in higher rate of return demanded by the investors as they have to spend their time and resources on monitoring the management behavior (Houqe, Ahmed & Zijl, 2017). Good corporate governance mechanisms not only help to increase the value of firms but also to develop high standards of transparency and accountability that assist the managers to make efficient investment decisions (Huang, Wang & Zhang, 2009). To get financing from external sources firms use corporate governance mechanism as a tool to minimize information asymmetry which help them in attracting funds from investors at low cost (Hearn, Piesse & Strange, 2011).

Firms incorporate various governance mechanisms in order to protect the interest of shareholders from the opportunistic behavior of managers as the separation of ownership and control brings information asymmetry between shareholders and managers (Rad, Embong, Mohd & Jaffar, 2016). Information asymmetry exist because it imposes a huge challenge for the firms to deliver all the necessary information to all the relevant parties, and it also affects the real managerial

investment decisions due to this the cost of equity increases for the firm (Radhakrishnan, 2014). A study found that dispersion in earning forecast increases the cost of equity for firms and this can be reduced by narrowing down the information asymmetry between management and shareholders (Healy & Palepu, 2001). In a competitive business environment firms now a day's disclose more and more information to its stakeholder in order to become more transparent and capture the interest of investors which helps the firms to raise funds from outside sources at low cost (Halaby, 2004). Hence the cost of equity capital may be reduced for a firm adopting higher corporate governance mechanism (He, Lepone & Leung, 2013).

Another approach suggested, which may reduce the cost of equity capital, is financial reporting quality (Hail & Leuz, 2006). Financial reporting quality also helps the firms to mitigate the information asymmetry between management and shareholders and also it influences the real managerial decisions (Margaritis & Psillaki, 2010). According to a research study, financial reporting quality reduces agency risk and it increases firm investment efficiency. It also suggests that any corporate governance mechanism which reduces agency conflicts would ultimately reduces the risk of inefficient investment (Guedhami & Mishra, 2009). Investment efficiency is considered as a predicted level of investment based on sales growth opportunities. A deviation from the predicted level of investment is considered as inefficient investment whether it is positive or negative (Gary, Koh & Tong, 2009). Firms face the issue of over investment due to the availability of free cash flows and managers prefer to invest in those projects which are remunerative from a management perspective but are not good for shareholders (Gormley & Matsa, 2014).

On the other hand under investment reflects the scenario in which firms fail to capture the opportunity of investing in projects with positive npv and that lost opportunity availed by the competitor results in lower profits (Lombardo & Pagano, 2002). Losing business to competitors and lower profits indicated inefficient investment decisions which may raise questions on the existence of firm (Hubbard, 1998).

The main objective of this study is to investigate whether investment efficiency has any effect on firm cost of equity or not. Our study also aims to identify that how managerial decisions affect the cost of equity for a shariah and non compliance firms. This relationship between firm efficiency and cost of equity can be identified with the help of addressing the following question. The initial questions that arise after the study of existing literature are that how managerial decisions affect the cost of equity for the firm. The second question of this study is whether impact of investment efficiency on cost equity is same for the shariah compliance firms and for non shariah compliance because both these type of firms are operating under the different framework but in a same market environment. The final question is that whether over investment or under investment affect the cost of equity for the firm or not as both the situations are value destroying activities.

Another objective of this study is to examine whether the relationship between investment efficiency and the cost of equity is same for the shariah and non shariah compliance firms. In Pakistan a large number of shariah compliance firms are operating under the shariah framework and yet not enough amount of work have been done on determining the cost of equity for the shariah compliance firms as compared to non shariah compliance firms (Jaffar, Nor, Selamat & Ismail, 2017). To operate under the framework of "shariah compliance" a firm must meet all the six key requirements advised by the shariah board i.e. the core business of the company should be Halal (Majeed, Zhang & Umar, 2018). Secondly, total debt to total asset ratio should be less than 37 percent, thirdly, the ratio of investments in non compliant securities to total assets should

be less than 33 percent, fourthly, the ratio of income from non compliant securities to total revenue should be less than percent (Richardson, 2006). Fifthly, the ratio of illiquid assets to total assets should be at least 25 percent and lastly, the market price per share should be greater than the net liquid assets per share (Lambert, Leuz & Verrecchia, 2007).

This research study makes the following contributions. First, it sheds light on the importance of investment efficiency that could affect the cost of equity for the firm in the context of Pakistan where a lot of markets imperfections are exist (Ruangviset, Jiraporn & Kim, 2014). Secondly this study explores the impact of investment decision on cost of equity for the shariah compliance firms and compared those results with the non shariah compliance firms (Lamver, Leuz & Verrecchia, 2011). In Pakistan there is a scant of research work in context of investment efficiency and cost of equity of firms. Thus, the findings of this research study extend the literature and may provide a parameter to shareholders to guard their interest. Finally, it addresses the issue of over and under investment that how different managerial decisions affect the cost of equity (Sanjeev & Sengupta, 2003).

2. Literature Review

All Firms need to raise capital in order to carry out their operations and for the expansion of their businesses (Jensen & Meckling, 1976). To get finance for their projects firms adopt either debt financing or equity financing. However, in return the firm has to bear the costs that are required by the investors and efficient allocation of capital helps firms to reduce the cost of equity (Gode & Mohanram, 2003). Past studies point out that in emerging markets like Pakistan corporate governance mechanism are still not mature enough and it contributes to higher agency problems which leads managers towards inefficient investment which gives rise to cost of equity (Gelb & Strawser, 2001). The implementation of corporate governance mechanisms could help firms to decrease the cost of their equity capital since such mechanism assist investors to forecast the result of an investment with greater accuracy (Fu, Kraft & Zhang, 2012). Through better corporate governance practices firms attract potential investor's by a sending a positive signal in the market that the management is working in the best interest of shareholder's (Francis, Khurana & Pereira, 2005).

In developing countries like Pakistan where high level of concentrated ownership structure exist it gives boost to the conflict of interests among the stakeholders and effect the firm's investment decisions (Francis, 2005).

It was argued that higher financial reporting quality could improve investment efficiency in two ways (Teti, Dell, Etrro & Resmini, 2016). Firstly as it eliminates the information asymmetry among the managers and shareholders and secondly it prevents the managers to pursue their personal interest (Easley & Hara, 2004). It was suggested that any improvement in the disclosure will help the firm to reduce the uncertainty about the firm's future in the market and will enable them to portray a positive image of the firm which will be helpful for firm to reduce the cost of equity (Easton, 2004). According to a research study, higher financial reporting quality could improve shareholders ability to monitor managerial activities and this will lead managers to invest more efficiently thus it will directly affect the cost of equity capital for the firm (Faccio, 2006).

It was reported that firms with higher reporting quality mitigates the risk of deviating from their expected investment level and reduces adverse selection cost (Dhaliwal, Tsang & Yang, 2011). A study points out that firms involved in financial misreporting are more vulnerable to make inefficient investment decisions (Titman, Wei & Xie, 2004). As such firms are able to obtain

cheaper finance due to overstating in the financial results (Tran, 2014) and thus, managers exploit these cheaper funds for their own benefit rather than to serve in the best interest of shareholders (Cutillas & Sanchez, 2014). According to researches, firms who ensure high audit quality mitigates the risk of inefficient investment because the need for quality auditing arises as external auditors limits the possibility of managerial opportunistic behavior and therefore reduces information risk (Collins & Huang, 2011). It has been documented that as the managerial ownership increases in a firm it lowers the cost of equity for the firm as managerial ownership aligns shareholders and management interests (Collett & Hraskey, 2005). Based on this discussion the first hypothesis is as follows:

H₁: There is a significant negative relationship between investment efficiency and cost of equity.

The researchers of this study further extended the analysis by examining the impact of investment efficiency on cost of equity for shariah compliance firms and for non shariah compliance firms in Pakistan. One of the basic requirements to be shariah compliance firm in Pakistan is to have low amount of debt (Valta, 2012). Previous studies also suggested that firms with low leverage ratio are able to generate funds at low cost from external sources as they have little bankruptcy risk (Jensen, 1986). It was argued that firm's leverage ratio is a key factor in determining the cost of equity for them (Kouser, Saba & Anjum, 2016). It was noted that threat of liquidation reduces as the firm uses low leverage and it affects the cost of equity capital for the firm (Chiang & Ko, 2009). In another related study, it was noted that the restriction to hold less cash for shariah compliance firm help firms to make efficient investment decisions as it restricts the firm to hold excess amount of cash that managers can invest for their own benefits (Claessens, Djankov & Lang, 2000).

H₂: The negative association between investment efficiency and cost of equity is weaker for shariah compliance firms than and for non shariah compliance firms.

The substitution theorem states that projects associated with high risks are expected to give high returns that maximizes the wealth of shareholders, whereas in case of loss it passed on to bondholders (Cheng, Collins & Huang, 2006). According to past research, the conflict between shareholders and bondholders leads the firms towards the problem of under investment or over investment (Cheng, Dhaliwal & Zhang, 2013). Most of the time firms face the issue of underinvestment because of the conflict between the shareholders and bondholders as bondholders do not have enough information about the quality of the investment projects of the firms and they demand higher premium (Xuan & Zhong, 2013). Overinvestment or under investment both the situations affect the firms negatively as it indicates that the firm is making inefficient investment decisions which gives rise to the cost of equity. Firm investment decisions are considered efficient if they undertake all the projects with positive net present value, if the firm turns down the opportunity to invest in projects that have positive net present value such decisions indicate that the firm is investing lower than the optimal investment level and thus firm faces the problem of under investment (Beiner, Drobetz, Schmid & Zimmermann, 2006). A large body of literature documented that whenever a firm faces a problem of under investment it destroys the value of the firm as firm losses business to its competitors and is not able to generate profit which raises questions regarding the survival of the firm (Jo & Harjoto, 2011). It was

concluded that the firms with higher level of free cash flows usually face the issue of over investment. In the study it was pointed out that difficulty in monitoring that mainly occurs due to the information asymmetry which creates the opportunity for managers to invest in such projects that are lucrative for themselves but it demolishes the interest of shareholders (Attig, Guedhami Mishra, 2008).

Evidence has been provided that availability of high level of free cash flows encourages managers to invest in those projects which are expected to give low returns and which would be neglected if the funds need to be raised externally. Managers invest internally available free cash flow for their own interest but it can destroy firm value and shareholder value (Bertrand & Mullainathan, 2003). Prior literature suggested that the availability of funds through internal or external sources affects the investment decisions of firms (Ashbaugh, Collins, Kinney & Lafond, 2009).

Low information asymmetry between the management and the corporate owner's restrict the managers from making under or over investment decisions (Kabir & Veld, 2013). The argument is that when more information is disclosed by a firm publically, it enhances the shareholders ability to monitor management investment decision and it also makes much easier for the firms to raise capital externally at low cost (The National Bureau of Economic Research [NBER], 2012).

H₃: There is a significant positive relationship between over investment and cost of equity.

H₄: There is a significant positive relationship between under investment and cost of equity.

3. Methodology

In order to explore the relationship between investment efficiency and cost of equity the current study analyzed a sample of 235 non financial listed firms on Pakistan Stock Exchange (PSX) from 2005 to 2015. The financial data of these companies are obtained from different sources like: State Bank of Pakistan (SBP) annual balance financial statements analysis of companies (non-financial) listed at Pakistan Stock Exchange (PSX), official websites of respective companies and Pakistan Stock Exchange.

The details of the sampled 235 firms from 14 distinct sectors are as fallow; 106 firms from Textile Sector, 27 firms from Sugar Industry, 11 firms belong to Food Industry, 12 firms included from Chemicals, Chemical Products and Pharmaceuticals Industry, 21 firms taken from Other Manufacturing Industry, 3 firms form Mineral Products Industry, 11 firms form Cement Industry, 13 firms from Motor Vehicles Industry, Trailers and Auto Parts Industry, 6 of them from Fuel & Energy Industry, 6 firms from Information, Communication & Transport Services Industry, 3 firms from Coke and Refined Petroleum Industry, 2 firms from Paper, Paperboard and Products Industry, 2 firms from Electrical Machinery and Apparatus Industry and 2 firms belongs to Other Services Industry.

This study proposes following models to test our hypothesis. Models are as below:

$$COE_{it} = \beta_0 + \beta_1 IE_{it} + \beta_2 SH_{it} + \beta_3 SHIE_{it} + \beta_4 BM_{it} + \beta_5 TA_{it} + \beta_6 LEV_{it} + \beta_7 TANG_{it} + \beta_8 CFO_{it} + \beta_9 GROWTH_{it} + \beta_{10} ROA_{it} + \epsilon_{it} \text{-----}(i)$$

$$COE_{it} = \beta_0 + \beta_1 OVER_{it} + \beta_3 BM_{it} + \beta_4 TA_{it} + \beta_5 LEV_{it} + \beta_6 TANG_{it} + \beta_7 CFO_{it} + \beta_8 GROWTH_{it} + \beta_9 ROA_{it} + \epsilon_{it} \text{-----}(ii)$$

$$COE_{it} = \beta_0 + \beta_1 UNDER_{it} + \beta_3 BM_{it} + \beta_4 TA_{it} + \beta_5 LEV_{it} + \beta_6 TANG_{it} + \beta_7 CFO_{it} + \beta_8 GROWTH_{it} + \beta_9 ROA_{it} + \epsilon_{it} \text{-----}(iii)$$

Where COE represents cost of equity calculated as proposed by (Biddle & Hilary, 2006). IE_{it} represents investment efficiency calculated following Biddle et al.,(2009). OVER_{it} is over investment and UNDER_{it} is under investment. SH_{it} is a dummy variable, which is 1 for Shariah Compliance firms and zero otherwise. BM_{it} is the book to market value of equity, TA_{it} is the log of total assets, LEV_{it} is the leverage ratio, TANG_{it} is the ratio of fixed assets to total asset, CFO_{it} represents cash flow from operations scaled by total assets, GROWTH_{it} is the average sales growth of last three years and ROA_{it} is return on assets. Description of each of the variable of the study is provided as under.

Cost of equity

Cost of equity is the dependent variable in this study and Price Earning Growth ratio (PEG) as a proxy to measure ex-ante cost of equity capital is used as followed by (Biddle, Hilary & Verdi, 2009).

Therefore, the cost of equity capital in analysis is measured as follows:

$$R_{PEG} = \sqrt{\frac{epst+2 - epst+1}{P_{it}}}$$

Where R_{peg} is the implied cost of equity, epst+2 is the earning per share two years ahead and epst+1 represents the earning per share one year ahead. While P_{it} is the year ending share price. We used realized epst+1 and epst+2 instead of forecasted earning per share as earning forecast data is not available for the whole period. PEG ratio approach requires that epst+2 > epst+1 > 0. To fulfill this assumption of PEG ratio we lost some observations. One of the main criticisms on PEG ratio approach is that it requires continuous earning growth but if a firm having negative earning price ratio in term of cost of equity it is difficult to interpret the results for loss making firms. Contrary to this, it was argued that PEG ratio is the superior approach in calculating the cost of equity to others as it reflects the riskiness of the firm more appropriately (Botosan & Plumlee, 2005). This measure is chosen because it has less arduous data requirements and also price-earnings ratio (PE ratio) is a useful technique to estimate rate of return in the equity market (Botosan & Plumlee, 2002).

Investment Efficiency

A firm is considered to be investing efficiently if it accepts all the projects with positive Net Present Value (NPV). According to prior literature, investment efficiency is measured as deviations from expected level of investment which is measured as predicted investment level based on sales growth opportunities. Therefore, both over investment and under investment are considered as inefficient investment decisions (Bushman & Smith, 2001). We estimated a model for expected investment as a function of sales growth. The model is described as follow:

$$Investment_{it} = \beta_0 + \beta SalesGrowth_{it-1} + \epsilon_{it} \text{-----(iv)}$$

Where, Investment_{it} is the total investment in the firm i in year t and it is defined as the net increase in tangible and intangible assets scaled by the total assets and SalesGrowth_{it-1} is the rate of change in sales from year t-2 to t-1. The discrepancy between actual and expected investment will represent the level of inefficient investment. Therefore, the positive deviation from predicted level of investment based on sales growth considered as overinvestment whereas a negative deviation from the predicted level of investment as per sales growth considered as underinvestment. Absolute value of residual (IE) from the above equation is used as measure of

investment inefficiency. This identifies that higher value of IE represents higher value of investment inefficiency.

This study included several control variables substantially based on previous studies. The control variables employed in this study are Size, Book-to-market value, Leverage, Tangibility, Sale growth, Return on assets and Cash flow from operating activities. We controlled size by taking the natural logarithm of total assets as it affects the agency cost for the firm. Larger firms are considered to have low cost of equity as they are more established and stable which reduces default risk (Byun, Choi, Hwang & Kim, 2013). Leverage was controlled following prior studies because according to them as the leverage increases the cost of equity would also increase for the firm because of the greater demand for monitoring and disclosures (Chalevas & Tzovas, 2010). This study controls for ROA as previous studies document a negative relationship between profitability and cost of equity (Chen, Young & Zhuang, 2012). Book-to-market (BM) ratio is considered as control variable in this study as there is a positive relationship between BM ratio and expected returns (Kitagawa & Gotoh, 2011). Growth is also controlled as firms linked with high long term growth in earning due to the high investment opportunities expected to have a lower cost of equity. Cash flows from operation and tangibility both are also used as control variables in this study to control the riskiness of the firms.

4. Results and Discussion

Table 1 provides the descriptive statistics for all the variables. It includes mean, median, maximum, minimum and standard deviation. Mean of Investment Efficiency (IE) is $-8E-18$ while it has maximum value 2.230 and minimum value is $-9E+00$ during sample period. Standard deviation of Investment Efficiency (IE) is 0.265. Mean of Over Investment (Over) is 0.116 while its maximum value is 2.230 and minimum value is $4.61E-05$ during sample period. Standard deviation of over investment (Over) is 0.175. Mean of under investment (Under) is $-7E-02$ while its maximum value is $-8E-06$ and has minimum value of $-9E+00$ during sample period. Standard deviation of under Investment (Under) is 0.285807. Mean of cost of equity (COE) is 0.683 while it has maximum value of 6.162 and minimum value is 0.015 and value of standard deviation is 0.741. Average of Book to Market Value of Equity (BM) is 0.221 while it has maximum value of 7.379 and minimum value is $-6E+00$ and value of standard deviation is 0.647. Mean of Cash Flow from Operations (CFO) is 52949.01 while it has maximum value of 9358. And minimum value is $-9E+05$ and its standard deviation is 331016.4. Mean of Leverage (LEV) is 0.698524 while it has the maximum value of 12.16313 and minimum value is 0.007 and value of standard deviation is 0.696. Mean of Size (TA) is 14.544 while it has maximum value of 20.132 and minimum value is 8.301 and value of standard deviation is 1.625. Mean of Tangibility (TANG) is 0.542 while it has maximum value of 0.999 and minimum value is 0.000 and value of standard deviation is 0.221. Mean of Growth (GROWTH) is 2.165 while it has maximum value of 971.717 and minimum value is $-1E+00$ and value of standard deviation is 42.508. Mean of Return on Assets (ROA) is 4.913 while it has maximum value of 266.050 and minimum value is $-9E+01$ and value of standard deviation is 16.219.

Table 1: Descriptive Statistics

| Variables | Mean | Median | Max | Min | Std. Dev. |
|-----------|-----------|-----------|-----------|-----------|-----------|
| IE | -8.00E-18 | -2.00E-02 | 2.230695 | -9.00E+00 | 0.265619 |
| OVER | 0.116115 | 0.060675 | 2.230695 | 4.61E-05 | 0.175411 |
| UNDER | -7.00E-02 | -4.00E-02 | -8.00E-06 | -9.00E+00 | 0.285807 |
| COE | 0.683045 | 0.440900 | 6.162792 | 0.015782 | 0.741413 |
| BM | 0.221026 | 0.146337 | 7.379208 | -6.00E+00 | 0.647972 |
| CFO | 52949.01 | 5478.105 | 9358538. | -9.00E+05 | 331016.4 |
| LEV | 0.698524 | 0.630368 | 12.16313 | 0.007217 | 0.696410 |
| TA | 14.54451 | 14.49560 | 20.13230 | 8.301522 | 1.625914 |
| TANG | 0.542890 | 0.552933 | 0.999682 | 0.000000 | 0.221157 |
| GROWTH | 2.165800 | 0.157312 | 971.7170 | -1.00E+00 | 42.50876 |
| ROA | 4.913640 | 3.020000 | 266.0500 | -9.00E+01 | 16.21966 |

Where **IE** is the Investment Efficiency, **COE** is the ex ante cost of equity calculated following Easton (2004), **BM** is book to market value of equity, **CFO** is cash flow from operations divided by total assets, **LEV** is leverage ratio, **TA** is the log of total assets, **TANG** is ratio of fixed assets to total assets, **ROA** is return on assets and **GROWTH** is average sales growth.

Table 2 reports the correlation among the variables. The value of cost of equity significantly positively correlated with the measure of inefficiency and its value is 0.1407. The value of correlation among Book to Market Value of Equity and measure of inefficiency is 0.0417. Cash flow from Operation is negatively correlated with measure of inefficiency having a value of -0.022. Leverage also has a positive correlation with measure of inefficiency and its value is 0.074. Size, Tangibility, Return on Assets and Growth all has a positive correlation with measure of inefficiency and their values are 0.0562, 0.1493, 0.0075 and 0.0996 respectively.

Table 2: Correlation Matrix

| | IE | COE | BM | CFO | LEV | TA | TANG | ROA | GROWTH |
|---------------|--------|--------|--------|--------|--------|-------|--------|-------|--------|
| IE | 1 | | | | | | | | |
| COE | 0.1407 | 1 | | | | | | | |
| BM | 0.0417 | 0.1963 | 1 | | | | | | |
| CFO | -0.022 | -0.09 | -0.041 | 1 | | | | | |
| LEV | 0.0743 | 0.2627 | -0.269 | -0.112 | 1 | | | | |
| TA | 0.0562 | -0.115 | 0.0254 | 0.2836 | -0.188 | 1 | | | |
| TANG | 0.1493 | 0.1875 | 0.2324 | -0.012 | 0.1414 | 0.111 | 1 | | |
| ROA | 0.0075 | -0.291 | 0.0133 | 0.2255 | -0.372 | 0.179 | -0.27 | 1 | |
| GROWTH | 0.0996 | 0.0051 | -0.013 | -0.012 | 0.0349 | 0.021 | -0.002 | -0.13 | 1 |

Where **IE** is the Investment Efficiency, **COE** is the ex ante cost of equity calculated following Easton (2004), **BM** is book to market value of equity, **CFO** is cash flow from operations divided by total assets, **LEV** is leverage ratio, **TA** is the log of total assets, **TANG** is ratio of fixed assets to total assets, **ROA** is return on assets and **GROWTH** is average sales growth.

Table 3 reports the results of impact of investment efficiency, over investment, under investment along with other control variables on cost of equity. In order to overcome the issue of endogeneity among the selected variables the study employed the Generalized Method of

Moments (GMM) for the estimation of the selected unbalance panel of 235 firms from non-financial sector. The results of the model 1 in the first column study shows that there is negative significant impact of investment efficiency on cost of equity. This implies that Cost of equity increases as the firm makes inefficient investment decisions as coefficient of ABIE is .3793 with the P-value of 0.005. The result from regression shows negative association between investment efficiency and cost of equity. The findings support hypothesis H1. The results of this study are also consistent with prior research that firms with high corporate governance practices eliminates agency conflicts which results in lower cost of equity (Chen, Hope, Li & Wang, 2011).

The Shariah Compliance firms are negatively associated with cost of equity as its coefficient value is -0.148002 with P-value of .0777. The results suggest that investors' required rate of return on equity change for shariah and non shariah compliance firms. This implies that cost of equity of shariah firm is lower to the non shariah firms. This is consistent with our argument that shariah compliance firms have low default risk due to the low leverage so that is why they have low cost of equity as compared to non shariah compliance firms. The interaction term (SHIE) shows the impact for shariah compliance firms along with inefficient investment on cost of equity. The results revealed that interactive term (SHIE) coefficient value is -0.951 and P value is .0083, as the interactive (SHIE) term coefficient is negative and statistically significant this supports second hypothesis H2. The negative relationship between investment efficiency and cost of equity is weaker for Shariah Compliance firms than for Non Shariah Compliance firms.

The results of the model 2 in table 3 also indicate that there is a positive and significant relationship exists between over investment and cost of equity as the coefficient of over investment (OVER) is 0.9011 with P- value of 0.0000. These results are in favor of our argument that over investment has a positive impact on cost of equity and thus our (H3) is also accepted on the basis of these results. Our results are in line with the previous studies that concluded that the availability of free cash flows encourage managers to invest in such projects who offer less return because managers are more concerned about their own interests and therefore neglects the interests of shareholders (Chen, Chen, Lobo & Wang, 2011).

The results of the model 3 indicate that the coefficient of under investment (UNDER) is -0.123 and a P-Value of 0.8947 which suggests that there is negative and insignificant relation with the cost of equity. Hence, the results for under investment also support the argument that when the firms invest lower than the predicted optimal level of investment it destroys the value of firm and in result it gives rise to the cost of equity for the firm. These results are in line with the prior studies that argued that both over and under investment affects the firm cost of capital (Chen, Chen, Lobo & Wang, 2010).

The results also reported that Book to market value of equity and a cost of equity has a positive and significant relationship and the value of coefficient of BM is 0.180 and a P-Value is 0.0615. A negative and insignificant relationship is found among Leverage, Size and Cash flow from operations on cost of equity. Although growth has shown a positive impact on cost of equity but the P-value (0.8481) shows that it has insignificant impact. Tangibility and return on assets shows the negative significant impact on cost of equity as their value of coefficient is -1.824 and -0.031 having the P-Value of 0.0106 and 0.000 respectively. The value of intercept is 0.752 while the value of adjusted R-square is 0.9090 and the value of J-statistics is 7.88E-19. In terms of control variables, the results of study are also consistent as reported previously (Chen, Chen, & Wei, 2009). A positive but insignificant relation is found between cash flow from operation and cost of equity. Similarly Tangibility, book to market value of equity and leverage is found to be significantly positively associated with the cost of equity and return on asset has negative and

significant impact on the cost of equity. While size and growth reports a negative insignificant impact on cost of equity.

Table 3: *Regression Results*

| Variables | Model 1 | | Model 2 | | Model 3 | |
|---------------------------|-----------|---------|-----------|---------|-----------|---------|
| | Coff. | t-value | Coff. | t-value | Coffe. | t-value |
| ABIE | 0.379** | 2.794 | | | | |
| OVER | | | 0.901*** | 7.289 | | |
| UNDER | | | | | -0.123 | -0.132 |
| SH | -0.148* | -1.77 | | | | |
| ABIE*SH | -0.951** | -2.66 | | | | |
| CFO | 4.77E-08 | 0.325 | -3.90E+08 | -1.284 | -2.80E-08 | -0.096 |
| TANG | 0.410** | 2.387 | 0.248*** | 4.154 | -1.824** | -2.587 |
| ROA | -0.010*** | -4.01 | -0.008*** | -9.099 | -0.031*** | -6.31 |
| TA | -0.018 | -0.785 | -0.019*** | -3.381 | -0.058 | -1.055 |
| BM | 0.120** | 2.284 | 0.307*** | 7.186 | 0.180* | 1.884 |
| LEV | 0.252** | 2.474 | 0.301*** | 5.175 | -0.756 | -1.531 |
| GROWTH | -0.007 | -1.132 | 0.039 | 0.967 | 0.018 | 0.191 |
| C | 0.561 | 1.572 | 0.512*** | 4.765 | 3.148*** | 4.627 |
| Adj. R² | 0.247 | | 0.869 | | 0.538 | |
| J-statistic | 32.98 | | 197 | | 0 | |
| Prob(J stat) | 0 | | 0 | | 0 | |

*** represents significance level at 1%, ** represents significance level at 5%, * represents significance level at 10%.

5. Conclusion

The purpose of this study is to identify and explain the relationship between investment efficiency and cost of equity. Using a sample of 235 Pakistani listed non financial firm's period from 2005 to 2015, the impact of investment efficiency on cost of equity was investigated. The results of this study showed that there is negative significant association between investment efficiency and cost of equity. These results suggest that investors now a day's value investment efficiency and prefer to invest in firms practicing high corporate governance standards as they consider corporate governance an important financial indicator.

This study also contributes to the literature by providing evidence that how investment efficiency effect the cost of equity for the two different types of firms operating under the different framework i.e. shariah compliance firms and non shariah compliance firms. Past studies documented that if a firm makes inefficient investment decisions its cost of equity increases as the investor demand high rate of return due to the high risk associated with the investment. A similar relation for Shariah and non Shariah Compliance firms was found but the increase in Cost of equity for Shariah firms is slightly less than for Non shariah firms this is due to the risk associated with both the types of firms and investor's demand for high return against high risk

that is why it is observed that a slight more increase for the cost of equity in non shariah compliance firms exists.

These results also indicate that the issue of over and under investment both negatively effects the cost for equity for the firms as it destroys the value of firm while this study also documents that the impact of underinvestment is insignificant. These findings have significant impact on firm's management, investors, and creditors and for researchers as well. This study provides evidence that all the stakeholders in the market need to realize the impact of investment efficiency and the price they have to pay in the presence of investment inefficiency. This study also holds a value for the private firms who are planning to go public because this study identified the cost of inefficient investment the firm has to pay to its investor's and also the benefits associated with making the efficient investment decisions. The findings of this research are also beneficial for the society as they document that how optimal investment decisions would help in efficient utilization of scanty resources.

This study also has some limitations. First limitation of is that the proxies used in this study for investment efficiency and cost of equity is subjected to measurement errors and each measurement has some certain advantages and disadvantages. Secondly, there was limited sample size which may affect the generalization of the study. Finally, this study is restricted to Pakistani firms only, so the results of this study cannot be generalized to other economies because of the change in institutional environment, higher level of investor's and creditor's protection may provide altogether different results.

The limitations of this study also provide an opportunity for future research. Only one proxy to measure cost of equity and investment efficiency was used, other measures can also be used for cost of capital and more control variables for finding residual of investment equation can increase the robustness of study (Cheng, Collins & Huang, 2006). Although number of controlled variables in the study have been used but maybe there are some other variables that can affect the cost of equity for the firms and that can be considered for future research. Finally, the impact of investment efficiency on cost of equity can be studied in other economies which have different institutional environment and legal settings.

References

- Agrawal, A., & Knoeber, C. (1996). Firm Performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis*, 31(3), 377-397.
- Ali, A., Chen, T. Y., & Radhakrishnan, S. (2007). Corporate disclosures by family firms. *Journal of Accounting and Economics*, 44(1-2), 238-286.
- Ashbaugh-Skaife, H., Collins, D. W., Kinney Jr, W. R., & LaFond, R. (2009). The effect of SOX internal control deficiencies on firm risk and cost of equity. *Journal of Accounting research*, 47(1), 1-43.
- Attig, N., Guedhami, O., & Mishra, D. (2008). Multiple large shareholders, control contests, and implied cost of equity. *Journal of Corporate Finance*, 14(5), 721-737.
- Beiner, S., Drobetz, W., Schmid, M. M., & Zimmermann, H. (2006). An integrated framework of corporate governance and firm valuation. *European Financial Management*, 12(2), 249-283.
- Bertrand, M., & Mullainathan, S. (2003). Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of political Economy*, 111(5), 1043-1075.

- Biddle, G. C., & Hilary, G. (2006). Accounting quality and firm-level capital investment. *The Accounting Review*, 81(5), 963-982.
- Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? *Journal of accounting and economics*, 48(2-3), 112-131.
- Botosan, C. A., & Plumlee, M. A. (2002). A re-examination of disclosure level and the expected cost of equity capital. *Journal of accounting research*, 40(1), 21-40.
- Botosan, C. A., & Plumlee, M. A. (2005). Assessing alternative proxies for the expected risk premium. *The Accounting Review*, 80(1), 21-53.
- Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics*, 32(1-3), 237-333.
- Byun, H. Y., Choi, S., Hwang, L. S., & Kim, R. G. (2013). Business group affiliation, ownership structure, and the cost of debt. *Journal of Corporate Finance*, 23, 311-331.
- Chalevas, C., & Tzovas, C. (2010). The effect of the mandatory adoption of corporate governance mechanisms on earnings manipulation, management effectiveness and firm financing: Evidence from Greece. *Managerial Finance*, 36(3), 257-277.
- Chen, K.C.W., Chen, Z. & Wei, K.C.J., (2009). Legal protection of investors, corporate governance, and the cost of equity capital. *Journal of Corporate Finance*, 15(3), 273–289.
- Chen, H., Chen, J. Z., Lobo, G. J., & Wang, Y. (2010). Association between borrower and lender state ownership and accounting conservatism. *Journal of Accounting Research*, 48(5), 973-1014.
- Chen, H., Chen, J. Z., Lobo, G. J., & Wang, Y. (2011). Effects of audit quality on earnings management and cost of equity capital: Evidence from China. *Contemporary Accounting Research*, 28(3), 892-925.
- Chen, F., Hope, O. K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, 86(4), 1255-1288.
- Chen, C., Young, D., & Zhuang, Z. (2012). Externalities of mandatory IFRS adoption: Evidence from cross-border spillover effects of financial information on investment efficiency. *The Accounting Review*, 88(3), 881-914.
- Cheng, C. A., Collins, D., & Huang, H. H. (2006). Shareholder rights, financial disclosure and the cost of equity capital. *Review of Quantitative Finance and Accounting*, 27(2), 175-204.
- Cheng, M., Dhaliwal, D. & Zhang, Y., (2013). Does investment efficiency improve after the disclosure of material weaknesses in internal control over financial reporting? *Journal of Accounting and Economics*, 56(1), 1–18.
- Chiang, Y.-C. & Ko, C.-L., (2009). An empirical study of equity agency costs and internationalization: Evidence from Taiwanese firms. *Research in International Business and Finance*, 23(3), 369–382.
- Claessens, S., Djankov, S., & Lang, L. H. (2000). The separation of ownership and control in East Asian corporations. *Journal of financial Economics*, 58(1-2), 81-112.
- Collett, P., & Hraskey, S. (2005). Voluntary disclosure of corporate governance practices by listed Australian companies. *Corporate Governance: An International Review*, 13(2), 188-196.
- Collins, D. & Huang, H., (2011). Management entrenchment and the cost of equity capital. *Journal of Business Research*, 64(4), 356–362.

- Cutillas Gomariz, M.F. & Sánchez Ballesta, J.P., (2014). Financial reporting quality, debt maturity and investment efficiency. *Journal of Banking & Finance*, 40, 494–506.
- Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59-100.
- Easley, D. & Hara, M.O., (2004). Information and the Cost of Capital. *Journal of Finance*, LIX(4), 1553–1583
- Easton, P.D., (2004). PE ratios, PEG ratios, and estimating the implied expected rate of return on equity capital. *The Accounting Review*, 79(1), 73–95.
- Faccio, M., (2006). Politically connected firms: can they squeeze the state? *American Economic Review*, 96(1), 369–386.
- Francis, J. et al., (2005). The market pricing of accruals quality. *Journal of Accounting and Economics*, 39(2), 295–327.
- Francis, J. R., Khurana, I. K., & Pereira, R. (2005). Disclosure incentives and effects on cost of capital around the world. *The Accounting Review*, 80(4), 1125-1162.
- Fu, R., Kraft, A. & Zhang, H., (2012). Financial reporting frequency, information asymmetry, and the cost of equity. *Journal of Accounting and Economics*, 54(2-3), 132–149.
- Gray, P., Koh, P. S., & Tong, Y. H. (2009). Accruals quality, information risk and cost of capital: evidence from Australia. *Journal of Business Finance & Accounting*, 36(1-2), 51-72.
- Gelb, D. S., & Strawser, J. A. (2001). Corporate social responsibility and financial disclosures: an alternative explanation for increased disclosure. *Journal of Business Ethics*, 33(1), 1-13.
- Gode, D. & Mohanram, P., (2003). Inferring the cost of capital using the Ohlson – Juettner Model. *Review of Accounting Studies*, 8(4), 399–431.
- Gormley, T.A. & Matsa, D.A., (2014). Common errors: how to (and not to) control for unobserved heterogeneity. *Review of Financial Studies*, 27(2), 617–661.
- Guedhami, O. & Mishra, D., (2009). Excess control, corporate governance and implied cost of equity: international evidence. *The Financial Review*, 44, 489–524.
- Hail, L., & Leuz, C. (2006). International differences in the cost of equity capital: do legal institutions and securities regulation matter? *Journal of Accounting Research*, 44(3), 485-531.
- Halaby, C.N., (2004). Panel models in sociological research: theory into practice. *Annual Review of Sociology*, 30, 507–544.
- He, W. P., Lepone, A., & Leung, H. (2013). Information asymmetry and the cost of equity capital. *International Review of Economics & Finance*, 27, 611-620.
- Healy, P.M. & Palepu, K.G., (2001). Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31, 405–440.
- Hearn, B., Piesse, J., & Strange, R. (2011). The role of the stock market in the provision of Islamic development finance: Evidence from Sudan. *Emerging Markets Review*, 12(4), 338-353.
- Hope, O. K., & Thomas, W. B. (2008). Managerial empire building and firm disclosure. *Journal of Accounting Research*, 46(3), 591-626.

- Hope, O. K., Kang, T., Thomas, W. B., & Yoo, Y. K. (2009). Impact of excess auditor remuneration on the cost of equity capital around the world. *Journal of Accounting, Auditing & Finance*, 24(2), 177-210.
- Houque, M. N., Ahmed, K., & Zijl, T. (2017). Audit quality, earnings management, and cost of equity capital: evidence from India. *International Journal of Auditing*, 21(2), 177-189.
- Huang, H., Wang, Q. & Zhang, X., (2009). The effect of CEO ownership and shareholder rights on cost of equity capital. *Corporate Governance: The International Journal of Business in Society*, 9(3), 255–270.
- Hubbard, R.G., 1998. Capital market imperfections and investment. *Journal of Economic Literature*, 36(1), 193–225.
- Jaffar, N., Nor, A. S. M., Selamat, Z., & Ismail, N. (2017). Directors' remuneration and corporate financial reporting quality: a conceptual discussion. *Advanced Science Letters*, 23(11), 10811-10814.
- Jensen, M.C. & Meckling, W.H., (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Jensen, M.C., (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323–329.
- Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of business ethics*, 103(3), 351-383.
- Kabir, R., Li, H. & Veld-Merkoulova, Y. V., (2013). Executive compensation and the cost of debt. *Journal of Banking & Finance*, 37(8), 2893–2907.
- Kitagawa, N. & Gotoh, M., 2011. Implied cost of capital over the last 20 years. *The Japanese Accounting Review*, 1, 71–104.
- Kouser, R., Saba, I., & Anjum, F. (2016). Impact of asymmetric information on the investment sensitivity to stock price and the stock price sensitivity to Investment. *Journal of Accounting and Finance in Emerging Economies*, 2(1), 1-16.
- Lambert, R., Leuz, C. & Verrecchia, R.E., (2007). Accounting Information, Disclosure, and the Cost of Capital. *Journal of Accounting Research*, 45(2), 385–420.
- Lambert, R. A., Leuz, C., & Verrecchia, R. E. (2011). Information asymmetry, information precision, and the cost of capital. *Review of Finance*, 16(1), 1-29.
- Lombardo, D., & Pagano, M. (2002). Law and equity markets: A simple model. In Joe McCahery, Pieter Moerland, Theo Raaijmakers & Luc Renneboog *Corporate governance regimes: Convergence and diversity* (343-362). Oxford University Press.
- Majeed, M. A., Zhang, X., & Umar, M. (2018). Impact of investment efficiency on cost of equity: evidence from China. *Journal of Asia Business Studies*, 12(1), 44-59.
- Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance*, 34(3), 621-632.
- McNichols, M. F., & Stubben, S. R. (2008). Does earnings management affect firms' investment decisions? *The Accounting Review*, 83(6), 1571-1603.
- Ohlson, J.A. & Juettner-nauroth, B.E., (2005). Expected EPS and EPS growth as determinants of value. *Review of Accounting Studies*, 10(2-3), 349–365.
- Omran, M. F. (2009). Examining the effects of Islamic beliefs on the valuation of financial institutions in the United Arab Emirates. *Review of Middle East Economics and Finance*, 5(1), 72-79.
- Pindado, J., & De La Torre, C. (2009). Effect of ownership structure on underinvestment and overinvestment: empirical evidence from Spain. *Accounting & Finance*, 49(2), 363-383.

- Rad, S. S. E., Embong, Z., Mohd-Saleh, N., & Jaffar, R. (2016). Financial information quality and investment efficiency: evidence from Malaysia. *Asian Academy of Management Journal of Accounting & Finance*, 12(1), 129-151.
- Radhakrishnan, S., (2014). The China puzzle: opportunities for accounting research. *China Journal of Accounting Research*, 7(1), 1–8.
- Richardson, S. (2006). Over-investment of free cash flow. *Review of accounting studies*, 11(2-3), 159-189.
- Ruangviset, J., Jiraporn, P., & Kim, J. C. (2014). How does corporate governance influence corporate social responsibility? *Procedia-Social and Behavioral Sciences*, 143, 1055-1057.
- Sanjeev, B. & Sengupta, P., (2003). Investors and outside directors effect of corporate governance on bond ratings and yields : The role of institutional investors and outside directors. *The Journal of Business*, 76(3), 455–475.
- Teti, E., Dell’Acqua, A., Etró, L., & Resmini, F. (2016). Corporate governance and cost of equity: empirical evidence from Latin American companies. *Corporate Governance: The International Journal of Business in Society*, 16(5), 831-848.
- The National Bureau of Economic Research. (2012). China's financial System: opportunities and challenges. Allen, F., Qian, J., Zhang, C., and Zhao, M. *NBER Working Papers Corporate Finance*. Retrieved from <http://www.nber.org/papers/w17828>
- Titman, S., Wei, K.C.J. & Xie, F., (2004). Capital Investments and Stock Returns. *Journal of Financial and Quantitative Analysis*, 39(4), 677–700.
- Tran, D.H., (2014). Multiple corporate governance attributes and the cost of capital – evidence from Germany. *The British Accounting Review*, 46(2), 179–197.
- Valta, P., (2012). Competition and the cost of debt. *Journal of Financial Economics*, 105(3), 661–682.
- Xuan-Quang, D., & Zhong-Xin, W. (2013). Impact of ownership structure and corporate governance on capital structure: The case of Vietnamese firms. *Australian journal of Business and Management Research*, 3(3), 11-19.